Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDWARD YEH
and
OLIVIER LAPARRA

Appeal No. 2002-0498
Application No. 09/441,899

ON BRIEF

Before KIMLIN, LIEBERMAN and POTEATE, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-20, all the claims in the present application. Claim 1 is illustrative:

1. A method for forming a transistor gate structure comprising the following steps:

(a) forming a gate oxide layer;

(b) depositing gate material on the gate oxide layer;

(c) depositing a layer of silicon oxynitride on the gate material;

(d) etching the layer of silicon oxynitride, the gate material and the gate oxide layer to form a gate structure, a silicon oxynitride region remaining on top of the gate structure;

(e) performing a wet chemical process to remove the silicon oxynitride region from the top of the gate structure, the wet chemical process removing the silicon oxynitride region by selectively etching the silicon oxynitride region; and

(f) after performing the wet chemical process, forming spacers around the gate structure.

The examiner relies upon the following references as evidence of obviousness:

Lin et al. (Lin)	5,883,011	Mar. 16, 1999
Cheung et al. (Cheung)	5,891,784	Apr. 06, 1999

Stanley Wolf Ph.D. et al. (Wolf), 1 Silicon Processing for the VLSI Era 534-35 (Lattice Press, California 1990)

Appellants' claimed invention is directed to a method for forming a transistor gate structure which comprises, inter alia, selectively etching, by way of a wet chemical process, the silicon oxynitride region from the top of a gate structure.

Appealed claims 1-3, 6-10, 13-16, 19 and 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lin in view of

Cheung. Claims 4, 5, 11, 12, 17 and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over the stated combination of references further in view of Wolf.

We have thoroughly reviewed the respective positions advanced by appellants and the examiner. In so doing, we find that the examiner has failed to establish a prima facie case of obviousness for the claimed subject matter. Accordingly, we will not sustain the examiner's rejections under § 103 for the reasons set forth by appellants, particularly in the Reply Brief, which we incorporate herein. We add the following for emphasis only.

We agree with appellants that Lin does not describe or suggest the claimed step of selectively etching the silicon oxynitride region which overlies the gate structure. Rather, Lin describes etching sacrificial layer 106 which effects the removal of silicon oxynitride region 108 (BARC layer). While Lin removes the silicon oxynitride region, the removal is not accomplished by selectively etching the silicon oxynitride.

It is the examiner's position that Lin describes an alternate embodiment at column 4, lines 51-55, wherein Lin discloses that the silicon oxynitride region 108, sacrificial layer 106 and silicon layer 104 may be etched simultaneously or

by "a series of dedicated etches which removes these layers one layer at a time." However, as explained by appellants in their Reply Brief, this portion of Lin refers to the etching which forms the gate structure of Figure 1D, which corresponds to step (d) of claim 1. We agree with appellants that the examiner is apparently confused on this point. Lin provides no teaching or suggestion that the series of dedicated etches performed one layer at a time can be applied to the removal of the silicon oxynitride region 108 of Figure 1F. Also, the examiner advances no rationale why it would have been obvious for one of ordinary skill in the art to employ the dedicated etches, one layer at a time, for removing the silicon oxynitride region 108 of Figure 1F. As a point of emphasis, we note that the sentence immediately following Lin's disclosure at column 4, lines 51-55, reads "[i]n accordance with the invention, the sacrificial layer is then removed to lift off the BARC layer."

The examiner's citation of Cheung and Wolf for other claimed features does not remedy the basic deficiency of Lin outlined above.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is reversed.

REVERSED

EDWARD C. KIMLIN Administrative Patent Judge	)	
PAUL LIEBERMAN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LINDA R. POTEATE Administrative Patent Judge	)	

ECK:clm

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